

Tissue-scale flows in the early quail embryo

The coherent tissue-scale motion of cells in early quail embryos include the well-described “polonaise motion” of cells during the formation of the primitive streak and the less well-studied chiral flow of cells at the tip of the streak just before streak retraction. Passive flows ranging in scale from molecular fluids to sand dunes share a common description in terms of the types of forces fluid elements may exert on neighbors. Similarly, both the cortical flows generated by chiral active proteins within a cell and tissue-scale flows of active, dividing, potentially chiral cells within a tissue should share descriptions. Building on the lab expertise in intra-cellular chiral flows and focusing on the flow of cells at onset of streak retraction at the tissue scale, we will explore the applicability of this analogy. We will ask what can be learnt about cell-cell interactions from the large scale flows and what implications they may have for patterning.

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